Appl. No. 09/752,744
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Amendments to the Claims:

This listing of claims replaces all prior versions, and listings, of claims in the application.

Listing of Claims:

1.   (Currently amended)   A multicast failover device comprising:

~~a processor;~~

~~at least one~~a primary receiver for receiving packets from ~~at least one~~a primary multicast stream source;

~~at least one~~a secondary receiver for receiving packets from ~~at least one~~a secondary multicast stream source~~;~~, wherein the primary receiver and secondary receiver receive packets simultaneously;

a processor adapted to:

~~logic for multicasting~~multicast packets received ~~by~~from the primary multicast stream source over an external network;

~~logic for detecting~~detect an adverse change in a primary stream packet from the primary multicast stream source; ~~and~~

~~logic for multicasting a~~select a secondary stream packet from the secondary multicast stream source in lieu of ~~multicasting the packet from~~the primary ~~multicast~~ stream packet when the adverse change in the primary stream packet ~~of the primary multicast stream~~is detected; and

multicast the selected secondary stream packet.

2.   (Original)   The multicast failover device of claim1 further comprising:

storage for a primary buffer for storing packets received from the primary multicast stream source; and

storage for a secondary buffer for storing packets from the secondary multicast stream source.

3.   (Currently amended)   The multicast failover device of claim 2 wherein the processor is further adapted to~~further comprises~~:

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~~logic for multicasting~~ multicast packets from the primary buffer over an external network;

~~logic for detecting and~~ detect an adverse change in a primary buffer packet stored in the primary buffer; and

~~logic for multicasting~~ multicast a secondary buffer packet from the secondary buffer over the external network when the adverse change in the corresponding primary buffer packet ~~of the primary buffer~~ is detected.

4.   (Currently amended)   The multicast failover device of claim 3 wherein the processor is ~~further comprises~~ further adapted to ~~logic for~~ synchronize ~~ing~~ the packets in the primary buffer and the secondary buffer.

5.   (Currently amended)   The multicast failover device of ~~claim 4~~ claim 3 wherein the ~~logic for synchronizing~~ processor is further adapted to: ~~packets in the primary buffer and the secondary buffer comprises:~~

~~logic for identifying~~ identify the source of the primary stream packet and the primary stream packet's sequential position in a primary multicast stream ~~when the packet is from the primary multicast stream source~~;

~~logic for identifying~~ identify the source of the secondary stream packet and the second stream packet's sequential position in a secondary multicast stream ~~when the packet is from the secondary multicast stream source~~;

~~logic for identifying a packet's sequential position from a multicast stream;~~

~~logic for inserting~~ insert ~~a~~ the primary ~~multicast~~ stream packet in the primary buffer at an offset "X" that maps to the primary stream packet's sequential position ~~from~~ in the primary multicast stream; and

~~logic for inserting~~ insert the secondary stream packet in the secondary buffer at an offset "Y" that maps to the secondary stream packet's sequential position in the secondary multicast stream such that the primary buffer packet and the secondary buffer packet at offset "X" are the same and the primary buffer packet and the secondary buffer packet at offset "Y" are the same ~~a secondary stream multicast packet in the secondary buffer at an offset that maps to the packet's sequential position from the secondary multicast stream such that the packet in the primary~~

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~~buffer at a specific offset is of the same packet's sequential position as is the packet at the corresponding offset of the secondary buffer.~~

6.   (Currently amended)   The multicast failover device of claim 5 ~~further comprises logic for multicasting~~ wherein the processor is further adapted to multicast the secondary buffer packet from offset "X" in the secondary buffer when an adverse change is detected in the primary buffer packet located at offset "X" in the primary buffer. ~~a packet from the secondary multicast buffer when an adverse change in a packet in the primary multicast buffer is detected.~~

7.   (Currently amended)   The multicast failover device of claim 6 wherein the ~~packets in the~~ primary buffer packet ~~further comprises:~~comprises a first IP header associated with a primary multicast stream server and wherein ~~the packets in~~ the secondary buffer packet ~~comprises~~comprises a second IP header associated with a second multicast stream server; and- wherein the processor is further ~~comprises~~adapted to:

> ~~logic for rewriting~~rewrite the first IP header with a virtual multicast IP address and port number when ~~a packet from~~ the primary buffer packet is multicast on the external network; and

> ~~logic for rewriting~~rewrite the second IP header with a virtual multicast IP address and port number when ~~a packet from~~ the secondary buffer packet is multicast on the external network.

8.   (Currently amended)   The multicast failover device of claim 7 wherein the processor ~~further comprises~~ is further adapted to ~~logic for multicasting~~multicast ~~the~~a packet next in a sequential position relative to ~~the~~a last packet multicast by the failover device such that ~~the~~a packet stream multicast by the failover device is continuous and ~~the~~ a packet sequence position integrity is maintained.

9.   (Currently amended)   A system for reliable multicasting of streaming data comprising:

> a primary multicast stream comprising primary multicast stream packets having a first multicast IP address and port number;

> a secondary multicast stream comprising secondary multicast stream packets having a second multicast IP address and port number;

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an enterprise network on which the sources for primary multicast stream packets

and secondary multicast stream packets are connected;

a multicast failover device connected to the enterprise network

comprisescomprising a primary receiver for receiving the primary multicast stream

packets;packets, a secondary receiver for receiving a-the secondary multicast

stream of packets, packets; and an external network for transmitting multicast

stream packets to at least one user, wherein the primary receiver and secondary

receiver receive packets simultaneously and wherein the multicast failover device

is user; adapted to:

> logic for multicasting multicast the primary multicast stream packets over
> the external network;
>
> logic for detecting detect an adverse change in a primary stream packet
> from the primary multicast stream;
>
> logic for multicasting select a secondary multicast stream packet over the
> external network in lieu of multicasting the primary multicast stream packet
> when the adverse change in the primary multicast stream packet is detected;
> and
>
> multicast the selected secondary multicast stream packet.

10. (Original) The system of claim 9 further comprising:

storage for a primary buffer for storing the primary multicast stream packets; and

storage for a secondary buffer for storing the secondary multicast stream packets.

11. (Currently amended) The system of claim 10 further comprisingwherein the

multicast failover device is further adapted to:

> logic for multicasting multicast packets from the primary buffer over the external
> network;
>
> logic for detectingdetect an adverse change in a primary buffer packet stored in the
> primary buffer; and
>
> logic for multicastingmulticast a secondary buffer packet from the secondary buffer
> over the external network when the adverse change in the corresponding primary
> buffer packet of the primary buffer is detected.

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12.   (Currently amended)   The system of claim 11 ~~further comprising~~wherein the multicast failover device is further adapted to ~~logic for synchronizing~~synchronize the packets in the primary buffer and the secondary buffer.

13.   (Currently amended)   The system of ~~claim 12~~claim 11 wherein the multicast failover device is further adapted to: ~~wherein the logic for synchronizing packets in the primary buffer and the secondary buffer comprises:~~

       ~~identifying~~identify ~~when a packet is from~~ the~~-~~ primary stream packet and its sequential position in the primary multicast stream;

       ~~logic for identifying~~identify when ~~a packet is from~~ the secondary stream packet and its sequential position in the secondary multicast stream;

       ~~logic for identifying a packet's sequential position from the primary stream;~~

       ~~logic for identifying a packet's sequential position from the secondary stream;~~

       ~~logic for inserting~~insert ~~a~~the primary stream packet in the primary buffer at an offset "X" that maps to the primary stream packet's sequential position ~~from~~in the primary multicast stream; and

       ~~logic for inserting~~insert ~~a~~the secondary stream packet in the secondary buffer at an offset "Y" that maps to the secondary packet's sequential position ~~from~~in the secondary multicast stream such that the primary buffer packet and the secondary buffer packet at offset "X" are the same and the primary buffer packet and the secondary buffer packet at offset Y are the same. ~~a packet in the primary buffer at a specific offset is of the same packet's sequential position as is the packet at the corresponding offset of the secondary buffer.~~

14.   (Currently amended)   The system of claim 13 wherein the multicast failover device is further adapted to multicast ~~further comprises logic for multicasting a packet from~~the secondary buffer packet from offset "X" in the secondary buffer when an adverse change is detected in the primary buffer packet located at offset "X" in the primary buffer. ~~the secondary buffer when an adverse change in a packet in the primary buffer is detected.~~

15.   The system of claim 13 wherein the multicast failover device is further adapted to: ~~The system of claim 14 further comprises:~~

       ~~logic for rewriting~~rewrite the IP address and port number of ~~a packet of~~the primary

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buffer packet with a virtual IP address and port number when a-the primary buffer

packet is multicast over the external network; and

logic for rewriting rewrite the IP address and port number of a packet of the

secondary buffer with the virtual IP address and port number when a-the secondary

buffer packet is multicast over the external network.

16.   (Currently amended)   The system of claim 15 wherein the multicast failover device

is further adapted to multicast further comprising logic for multicasting the a packet next

in a sequential position such that the a packet stream multicast by the system is continuous

and the a packet order integrity is maintained irrespective of the a buffer location that in

which the next packet had been stored. such that the clients detect no outage, discontinuity

or quality loss.

17.   (Currently amended)   A method for reliably multicasting data comprising;

receiving over an enterprise network primary multicast stream packets from a

primary multicast stream server, said-wherein the primary stream packets having

comprise a first multicast IP address and port number;

receiving over an enterprise network secondary multicast stream packets from

a secondary multicast stream server, said-wherein the secondary stream packets

having-comprise a second multicast IP address and port number, and wherein the

secondary stream packets are received simultaneously with the primary stream

packets;

multicasting the primary stream packets over an external network;

detecting an adverse change in a primary stream packet from the primary multicast

stream server;

multicasting a secondary multicast stream packet over the external network in lieu

of multicasting the primary multicast stream packet when the adverse change in the

packet of the primary multicast stream packet is detected.

18.   (Currently amended) The method of claim 17 further comprising:

storing packets received from the primary multicast stream source server in a

primary buffer; and

storing packets from the -secondary multicast stream source server in a secondary

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buffer.

19. (Currently amended) The method of claim 18 further comprising further comprises:

multicasting packets from the primary buffer over an external network;

detecting an adverse change in a primary buffer packet stored in the primary buffer; and

multicasting a secondary buffer packet from the secondary buffer over the external network when the adverse change is detected in the ~~corresponding packet of the~~ primary buffer packet. ~~is detected.~~

20. (Currently amended) The method of claim 19 further comprising ~~es~~ synchronizing the packets in the primary buffer and the secondary buffer.

21. (Currently amended) The method of claim 20 wherein ~~the~~ synchronizing packets in the primary buffer and the secondary buffer comprises:

identifying ~~the source of the~~ the primary stream packet's sequential position in a primary multicast stream; ~~packet when the packet is from the primary multicast stream source;~~

identifying ~~the source of the~~ secondary stream packet's sequential position in a secondary multicast stream; ~~packet when the packet is from the secondary multicast stream source;~~

~~identifying a packet's sequential position from a multicast stream;~~

inserting ~~a~~ the primary ~~multicast~~ stream packet in the primary buffer at an offset "X" that maps to the primary stream packet's sequential position ~~from~~ in the primary multicast stream; and

inserting ~~a~~ the secondary stream ~~multicast~~ packet in the secondary buffer at an offset "Y" that maps to the secondary buffer packet's sequential position ~~from~~ in the secondary multicast stream such that the primary buffer packet and the secondary buffer packet at offset "X" are the same and the primary buffer packet and the secondary buffer packet at offset "Y" are the same. ~~packet in the primary buffer at a specific offset is of the same packet's sequential position as is the packet at the corresponding offset of the secondary buffer.~~

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22.   (Currently amended)   The method of claim 21 further comprising es-multicasting the secondary buffer packet from offset "X" in the secondary buffer when an adverse change is detected in the primary buffer packet located at offset "X" in the primary buffer.a packet from the secondary multicast buffer when an adverse change in a packet in the primary multicast buffer is detected.

23.   (Currently amended)   The method of claim 22 further comprising es-rewriting IP header information in the-a packet being multicast on the external network with a virtual multicast IP address and port number when the-a source of the packet is the primary buffer and when the-a source of the packet is the secondary buffer.

24.   (Currently amended)   The method of claim 23 further comprising es-multicasting the-a packet next in a sequential position relative to the-a last packet multicast on the external network such that the-a packet stream multicast is continuous and the-a packet sequence position integrity is maintained.

25.   (New)   A multicast failover device comprising:

a processor;

at least one primary receiver for receiving packets from at least one -primary multicast stream source;

at least one secondary receiver for receiving packets from at least one secondary multicast stream source;

logic for multicasting packets received by the primary multicast stream source over an external network;

logic for detecting an adverse change in a primary stream packet from the primary multicast stream;

logic for multicasting a secondary stream packet from the secondary multicast stream in lieu of -multicasting the primary stream packet from the primary multicast stream when the adverse change in the primary stream packet is detected;

storage for a primary buffer for storing packets received from the primary multicast stream source;

storage for a secondary buffer for storing packets from the secondary multicast stream source.

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logic for multicasting packets from the primary buffer over an external network;

logic for detecting an adverse change in a primary buffer packet stored in the primary buffer;

logic for multicasting a secondary buffer packet from the secondary buffer over the external network when the adverse change in the corresponding primary buffer packet is detected; and

logic for synchronizing the packets in the primary buffer and the secondary buffer comprising:

  logic for identifying the source of the primary stream packet and the primary stream packet's sequential position in the primary multicast stream;

  logic for identifying the source of the secondary stream packet and the second stream packet's sequential position in the secondary multicast stream;

  logic for inserting the primary stream packet in the primary buffer at an offset "X" that maps to the primary stream packet's sequential position in the primary multicast stream; and

  logic for inserting the secondary stream packet in the secondary buffer at an offset "Y" that maps to the secondary stream packet's sequential position in the secondary multicast stream such that the primary buffer packet and the secondary buffer packet at offset "X" are the same and the primary buffer packet and the secondary buffer packet at offset Y are the same.

26.   (New) The multicast failover device of claim 25 further comprising logic for multicasting the secondary buffer packet from offset "X" in the secondary buffer when an adverse change is detected in the primary buffer packet located at offset "X" -in the primary buffer.

27.   (New) The multicast failover device of claim 26, wherein the primary buffer packet comprises a first IP header associated with a primary multicast stream server and wherein the secondary buffer packets comprise a second IP header associated with a second multicast stream server, and wherein the processor further comprises:

  logic for rewriting the first IP header with a virtual multicast IP address and port number when the primary buffer packet is multicast on the external network; and

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logic for rewriting the second IP header with a virtual multicast IP address and port

number when the secondary buffer packet is multicast on the external network

28.   (New) The multicast failover device of claim 27 wherein the processor further

comprises logic for multicasting a packet next in a sequential position relative to a last

packet multicast by the failover device such that a packet stream multicast by the failover

device is continuous and a packet sequence position integrity is maintained.

29.   (New) A system for reliable multicasting of streaming data comprising:

primary stream packets having a first multicast IP address and port number;

secondary stream packets having a second multicast IP address and port number;

an enterprise network on which the sources for the primary stream packets and the

secondary stream packets are connected; and

a multicast failover device connected to the enterprise network comprising:

> a receiver for receiving the primary stream packets;

> a receiver for receiving the secondary -stream packets;

> an external network for transmitting multicast stream packets to at least one

> user;

> logic for multicasting the primary stream packets over the external network;

> logic for detecting an adverse change in a primary stream packet from the

> primary stream;

> logic for multicasting a secondary stream packet over the external network

> in lieu of multicasting the primary multicast stream packet when the

> adverse change in the primary stream packet is detected;

> storage for a primary buffer for storing the primary multicast stream

> packets;

> storage for a secondary buffer for storing the secondary multicast stream

> packets;

> logic for multicasting a primary buffer packet from the primary buffer over

> the external network;

> logic for detecting an adverse change in the primary buffer packet;

> logic for multicasting a secondary buffer packet over the external network

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when the adverse change in the corresponding primary buffer packet is detected; and

logic for synchronizing the packets in the primary buffer and the secondary buffercomprising:

logic for identifying the primary stream packet and its sequential position in the primary stream;

logic for identifying when the secondary stream packet and its sequential position in the secondary stream;

logic for inserting the primary stream packet in the primary buffer at an offset "X" that maps to the primary stream packet's sequential position in the primary multicast stream; and

logic for inserting the secondary stream packet in the secondary buffer at an offset "Y" that maps to the secondary stream packet's sequential position in the secondary multicast stream such that the primary buffer packet and the secondary buffer packet at offset "X" are the same and the primary buffer packet and the secondary buffer packet at offset Y are the same.

30.   (New) The system of claim 29 wherein the multicast failover device further comprises logic for multicasting the secondary buffer packet from offset "X" in the secondary buffer when an adverse change is detected in the primary buffer packet located at offset "X" in the primary buffer.

31.   (New) The system of claim 30 further comprising:

logic for rewriting the IP address and port number of the primary buffer packet with a virtual IP address and port number when the primary buffer packet is multicast over the external network; and

logic for rewriting the IP address and port number of the secondary buffer packet with the virtual IP address and port number when a secondary buffer packet is multicast over the external network.

32.   (New) The system of claim 31 further comprising logic for multicasting a packet next in a sequential position such that a packet stream multicast by the system is

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continuous and a packet order integrity is maintained irrespective of the buffer location that the packet had been stored.

33.   (New) A method for reliably multicasting data comprising;

receiving over an enterprise network primary stream packets from a primary multicast stream server, wherein the primary stream packets comprise a first multicast IP address and port number;

receiving over an enterprise network secondary stream packets from a secondary multicast stream server, wherein the secondary stream packets comprise a second multicast IP address and port number;

multicasting the primary stream packets over an external network;

detecting an adverse change in a primary stream packet;

multicasting a secondary stream packet over the external network in lieu of multicasting the primary stream packet when the adverse change in the primary stream packet is detected;

storing packets received from the primary multicast stream server in a primary buffer;

storing packets from the secondary multicast stream server in a secondary buffer;

multicasting packets from the primary buffer over an external network;

detecting an adverse change in a primary buffer packet stored in the primary buffer;

multicasting a secondary buffer packet from the secondary buffer over the external network when the adverse change is detected in the primary buffer packet; -and

synchronizing the packets in the primary buffer and the secondary buffer, wherein synchronizing packets in the primary buffer and the secondary buffer comprises:

identifying the primary stream packet's sequential position in the primary multicast stream;

identifying the secondary stream packet's sequential position in the secondary multicast stream;

inserting the primary stream packet in the primary buffer at an offset "X" that maps to the primary stream packet's sequential position in the primary multicast stream; and

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inserting the secondary stream packet in the secondary buffer at an offset "Y"

that maps to the secondary stream packet's sequential position in the secondary

multicast stream such that the primary buffer packet and the secondary buffer

packet at offset "X" are the same and the primary buffer packet and the

secondary buffer packet at offset "Y" are the same.

34. (New) The method of claim 33 further comprises multicasting the secondary
buffer packet from offset "X" in the secondary buffer when an adverse change is detected
in the primary buffer packet located at offset "X".

35. (New) The method of claim 34 further comprises rewriting IP header information
in a packet being multicast on the external network with a virtual multicast IP address and
port number when a source of the packet is the primary buffer and when a source of the
packet is the secondary buffer.

36. (New) The method of claim 35 further comprises multicasting a packet next in a
sequential position relative to a last packet multicast on the external network such that a
packet stream multicast is continuous and a packet sequence position integrity is
maintained.